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C & I 445, Professor Chris Bohne

Information Problem-Solving Lesson

**Introduction**

Due to the fact that I am not currently working in a school I chose to collaborate with my husband, Tom for this assignment. I wanted the lesson I developed or adapted to be useful if not to myself, someone else. Tom teaches biology and horticulture at Geneva High School. This lesson was created by my husband five years ago. This particular project is part of his Genetic Engineering unit for his horticulture classes. Originally, the lesson required students to make a Power Point presentation to display facts which support their arguments about Genetically Modified Organisms. I adapted the lesson and changed how the information was presented. I chose to have the students use the Web 2.0 tool WordleTM to present their findings. I felt by using a WordleTM word cloud slide of their main ideas it would force students to really know the facts which support their argument. They would be forced to internalize information and speak directly to the class without just simply reading their Power Point slides. The use of a WordleTM slide also promotes creativity and produces a strong visual image for talking points.

**Standards:**

**AASL Standards for the 21st Century Learner**

**1.1 Skills:**

**1.12** Use prior and background knowledge as context for new learning.

**1.14** Find, evaluate, and select appropriate sources to answer questions.

**1.1.6** Read, view, and listen for information presented in any format (e.g., textual, visual, media, digital) in order to make inferences and gather meaning.

**1.1.7** Make sense of information gathered from diverse sources by identifying misconceptions, main and supporting ideas, conflicting information, and point of view or bias.

**1.1.8** Demonstrate mastery of technology tools for accessing information and pursuing inquiry.

**1.2.4** Maintain a critical stance by questioning the validity and accuracy of all information.

**1.3.3** Follow ethical and legal guidelines in gathering and using information.

**2.1 Skills:**

**2.1.1** Continue an inquiry- based research process by applying critical- thinking skills (analysis, synthesis, evaluation, organization) to information and knowledge in order to construct new understandings, draw conclusions, and create new knowledge.

**2.1.2** Organize knowledge so that it is useful.

**2.1.4** Use technology and other information tools to analyze and organize information.

**2.1.6** Use the writing process, media and visual literacy, and technology skills to create products that express new understandings.

**2.2.3** Employ a critical stance in drawing conclusions by demonstrating that the pattern of evidence leads to a decision or conclusion.

**2.4.3** Recognize new knowledge and understanding.

**3.1 Skills**

**3.1.1** Conclude an inquiry- based research process by sharing new understandings and reflecting on the learning.

**3.1.3** Use writing and speaking skills to communicate new understandings effectively.

**3.1.4** Use technology and other information tools to organize and display knowledge and understanding in ways that others can view, use, and assess.

**3.3.3** Use knowledge and information skills and dispositions to engage in public conversation and debate around issues of common concern.

**4.1 Skills**

**4.1.8** Use creative and artistic formats to express personal learning.

**4.2.3** Maintain openness to new ideas by considering divergent opinions, changing opinions or conclusions when evidence supports the change, and seeking information about new ideas encountered through academic or personal experiences.

**Common Core Standards**

**Reading Standards for Literacy in Science and Technical Subjects 6–12**

**Key Ideas and Details**

1. Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
2. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

**Integration of Knowledge and Ideas**

7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

8. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

9. Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

**Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6–12**

**Research to Build and Present Knowledge**

7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

**Information Problem-Solving Lesson-Genetically Modified Organisms**

**Big 6 Skills**

1. **Task Definition**

(Days 1 & 2) **Background:**

* Students will watch movie, *Harvest of Fear* which details GMO background information from multiple perspectives.
* Students will take notes and answer questions on provided worksheet about movie content concerning Genetically Modified Organisms.

(Day 3)

* 1. **Define the problem**
* What are Genetically Modified Organisms?
* What effect do GMOs have on human beings?
* What effect do GMOs have on the environment?
  1. **Identify the information needed**

1. Students will research a specific question about Genetically Modified Organisms.
2. Each student or student group will be assigned one of the following questions.
3. Each student or student group will defend the **YES ARGUMENT** or the **NO ARGUMENT** for their assigned question.
4. Students will locate at least three (3) supporting facts for their argument.
5. Student’s argument will be logical.
6. Main ideas of argument will be presented to class using WordleTM slide as visual guide during presentation.
7. **Are GMOs safe to eat?**
8. **Have scientists gone too far in tampering with nature?**
9. **Do GMOs damage the environment?**
10. **Do we need GMOs to feed the world?**
11. **Are GMOs worth the risk?**
12. **Are the biotech companies that are creating GMOs gaining too much power over people?**
13. **Are GMOs helping farmers around the world?**

(Days 3-5)

1. **Information Seeking Strategies**
   * **2.1 Determine all possible sources.**

* Notes taken on movie, *Harvest of Fear*
* Print resources via Geneva High School Library catalog.
* Online via the following databases:
  + Student Resource Center Global Issues in Context
  + Encyclopedia Britannica
  + Facts on File Research
  + Gale Student Resources In Context
  + Global Issues in Context
  + CQ Researcher
* Internet searches
  + **2.2 Select the best source.**
* Students will select the best, most credible sources which validate their argument.

1. **Location & Access**
   * **3.1 Locate Sources**

* Notes from *Harvest of Fear* movie
* Librarian will review with students how to access the library catalog and databases.
* Librarian will also remind students to write notes in their own words and keep track of their sources for Works Cited page.
* Students will locate print resources on their question via Geneva High School Library catalog.
* Students will locate information to argue their position online via the following databases:
  + Student Resource Center Global Issues in Context
  + Encyclopedia Britannica
  + Facts on File Research
  + Gale Student Resources in Context
  + Global Issues in Context
  + CQ Researcher
* Students will locate information using keyword Internet searches and determine the validity of found websites.
  + **3.2 Find information within sources**
* Students will find pertinent information on their topic and argument within sources.

1. **Use of Information**
   * **4.1 Engage**

* Students will review personal notes from *Harvest of Fear* movie.
* Students will read articles or information from multiple sources.
* Students may watch applicable informational videos found online.
  + **4.2 Extract relevant information**
* Students will find most applicable facts which support their argument to given question.
* Students will take notes in their own words from sources.
* Students will correctly cite sources.

(Days 6-7)

1. **Synthesis**
   1. **Organize information from multiple sources.**

* Students will learn to create a slide using the website <http://www.wordle.net/> containing main points/supporting facts and defenses of argument.
* **GOAL:** to show students how this Web 2.0 tool can be used to organize findings and communicate them with others.

**WordleTM Lesson:** Students will spend 2 class periods in the computer lab learning how to use WordleTM and creating their presentation slide.

* WordleTM  is a Web 2.0 tool which is used to create word clouds.
* Text for word clouds is provided by maker of slide.
* Multiple fonts, layouts, and color schemes
* Slides can be printed, saved, shared in gallery
* The more a word is typed in text, the bigger it will appear in word cloud.
* To connect words into phrases put the ~ symbol between words when entering text.
* Teacher & Librarian will circulate and help students
* Students will organize information in notes to be used for presentation to class.

(Days 7-8)

* + **5.2 Present the result**
    - Student or group of students will orally present their argument to the class using their WordleTM slide as a visual guide.
    - Students will present an overall logical argument based on facts.
    - Student presentations will be organized, prepared and professional.
    - Students will have an audible voice, good eye contact, smooth transitions, knowledgeable, and appropriate use of humor.

1. **Evaluation**

**6.1 Judge the result (effectiveness)**

* GMO Project will be graded using the rubric.
* Each student will be asked a question regarding their research findings.
  + Student can score 0 to 5 depending on accuracy and thoroughness of answer to question.
* Students will turn in a copy of their WordleTM slide and a Works Cited page MLA style detailing their sources.

**6.2 Judge the process (efficiency).**

* + After both arguments are presented on GMO question, class will vote for the most convincing argument.
    - Students earn 3 Bonus Points if their argument is chosen.
  + Presentation Rubric